August 20, 2007

Ms. Amy M. Bennett
Standards Coordinator
Bureau of Water
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, SC 29201

Re: Triennial Review of South Carolina Regulation 61-68, *Water Classification and Standards*

Dear Ms. Bennett:

The following comments are provided on behalf of the South Carolina Manufacturers Alliance (SCMA) Environmental Committee.

The SCMA, with over 115 members, represents a very diverse group of manufacturers with interests in South Carolina. Many member companies are directly impacted by these water regulations. SCMA understands that SCDHEC must review and revise South Carolina's existing water quality standards regulations every three years in order to comply with Section 303(c)(2)(B) of the Federal Clean Water Act (CWA).

## ADOPTION OF EPA WATER QUALITY CRITERIA

During previous correspondence, SCMA and other stakeholders requested that the Department review any new or revised EPA criteria to determine their applicability to South Carolina rather than simply adopting them. This review should encompass all the national recommended water quality criteria for the protection of human health posted in the Federal Register on December 31, 2003. As demonstrated by the Department's modification of the arsenic criteria, there are many variables and assumptions that the EPA uses to calculate recommended water quality criteria, and many of those factors may not be applicable to South Carolina or are overly conservative. As shown below, SCMA has objection to the direct adoption of the thallium standard, and requests that the Department perform a similar analysis of the other federal criteria prior to incorporation into state regulation.

### Revision of the proposed South Carolina water quality standard for thallium

SCDHEC is proposing to adopt the recommended values of 0.24 ppb (W/O) and 0.47 ppb (Org. Only) which were posted in the Federal Register on December 31, 2003. With regard to the human health-based water quality standards for thallium in other EPA Region 4 states, most are either the same as those currently in effect in South Carolina (W/O – 1.7 ppb and Org. Only – 6.3 ppb) or do not exist. Georgia's standards, for example, do not include a W/O thallium standard, while North Carolina's and Mississippi's standards contain neither a W/O standard nor an Org. Only standard for thallium. Based on the requirements of other Region 4 states, the Department should consider whether or not revised thallium standards are necessary.

After conducting a thorough literature search and investigating the derivation of the proposed standards, SCMA has concluded that the application of these criteria to South Carolina waters is not consistent with the conditions used to derive them. Several factors are utilized in the

development of water quality criteria, and their derivation is based on conservative estimates of the risk to human health. These risk factors include the Reference Dose (RfD), the Relative Source Contribution (RSC), the Fish Ingestion Rate (FIR), the Bioconcentration Factor (BCF), and others. Prior to adopting any new criterion, SCDHEC should review each of these factors to ensure that they are appropriate for South Carolina and are not overly conservative. Several of the values used for these factors are overly conservative and one factor that is definitely not appropriate for South Carolina freshwaters is the BCF.

The BCF used to derive the proposed standards of 0.24 ppb (W/O) and 0.47 ppb (Org. Only) is a value of 116 liters/kilogram (L/kg). As detailed in the document titled, "Ambient Water Quality Criteria for Thallium" (EPA 440/5-80-074) and dated October 1980, this value was derived using three species (Atlantic salmon, soft-shell clam, and blue mussel) with BCF's of 130, 18, and 12 respectively. A BCF of 34 was mentioned for bluegill (which are resident in South Carolina), but this species was not used in the 116 BCF derivation calculation. Of the three species used, only the soft-shell clam is present in South Carolina. Therefore, rather than use a weighted average (based on the associated ingestion rates) of 116, a BCF of 18 appears to be more appropriate for South Carolina. Making this one change, for example, would result in an Org. Only standard of 3.02 ppb, and if only the soft-shell clam is used, possibly a lower ingestion rate is appropriate. Further review of each factor used to derive the proposed standards for their applicability in South Carolina is warranted.

Summary

In summary, SCDHEC should not adopt any federally recommended standard without a detailed review of its derivation and applicability to South Carolina surface waters. As recently documented with regard to the human health-based criteria for arsenic, the Department should not adopt generic federal standards without adequate technical review for determining applicability as to whether or not the revised standard would result in a meaningful improvement in human health or the environment. Without this technical review and human health/environmental impact assessment, the Department might adopt overly conservative standards that result in unwarranted economic impacts, placing South Carolina business and industry at a competitive disadvantage compared to other neighboring states. Noting also that the SC drinking water standard for thallium is 2 ppb, SCMA requests that SCDHEC review the need for a W/O standard for thallium as well as the derivation of the Org. Only standard. In addition, with regard all of the proposed criteria, SCMA requests that the Department document the rationale within R.61-68 for their inclusion as South Carolina water quality standards.

## SOURCE WATER PROTECTION

Introduction

Although there are only a few sections of R.61-68 that relate to source water protection and those sections have not been modified since the 2001 triennial review, it is only since the Department's policies were initiated regarding implementation of the associated regulations into NPDES permit conditions that their true cost impacts to regulated entities has been realized. The cost impacts to regulated entities can run in the millions of dollars due to wastewater treatment system modifications necessary to meet limits derived through application of the Department's current source water protection policy. Section E.14.c.(5) of the regulation creates inconsistencies between the Department's source water protection program/plan and the NPDES permitting policies/procedures. It states:

> The Department may, after Notice of Intent included in a notice of a proposed NPDES permit in accordance with Regulation 61-9.124.10, determine that drinking water MCLs or W/O shall not apply to discharges to those waterbodies where there is: **no potential to affect** an existing or proposed drinking water source and no state-approved source water protection area.

The Department has adopted an extremely conservative position with regard to the "potential to affect" source water protection areas (SWPA's), and this policy will significantly increase the cost for compliance by requiring NPDES permitted dischargers to comply with unnecessarily stringent NPDES permit limitations.

SCDHEC applies the water/organism (W/O) human health-based water quality criteria and Maximum Contaminant Levels (MCLs) when there is a potable water intake "downstream." In several cases, these criteria and associated NPDES permit limits are considerably more stringent than those based on the consumption of organisms only (human health-based) or those based on aquatic life criteria. In many cases, the application of these W/O values in the calculation of water quality based limits results in end-of-pipe NPDES permit limits that are more restrictive than the respective drinking water MCL for a particular parameter, even when dilution credits are allowed.

South Carolina's designated use of freshwater is "as a source for drinking water supply after conventional treatment." Accordingly, SCDHEC's current source water protection policy is unreasonably conservative. If SCDHEC calculated NPDES permitted discharge limits such that MCLs would be met at the at intake point of the municipal water intake downstream of the NPDES discharge, this would still provide for a level of protection of human health even more conservative than required by SCDHEC's designated use of freshwater.

Background

The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) provide for a greater focus on pollution prevention as an approach to protecting surface water and groundwater supplies from pollution. The amendments require SCDHEC to provide Source Water Assessments for federally defined public water supply systems. The US EPA approved South Carolina's *Source Water Assessment and Protection Program Plan* on November 6, 1999. This plan includes detailed procedures addressing how the state will evaluate the susceptibility of potable water intakes to upstream risk.

Protecting potable water intakes from upstream NPDES dischargers is necessary to ensure the potable water treatment plants can achieve their "outgoing" MCLs and protect human health during consumption. Factors used in prioritizing susceptibility of the intake is the distance of the associated "risks" upstream from the intake and the mass loading of a particular pollutant. Potential upstream "risks" include various operations associated with industrial, commercial, agricultural, municipal, residential, and rural sources. Risk types can vary from emergency/high risk events (such as chemical spills), to intermittent sources/medium risk (such as storm water runoff), to continuous sources/low risk (such as wastewater discharges). Based on the upstream travel time distance, SWPA's are developed. The designation of the primary and secondary SWPA's is based upon hydraulic time of travel (TOT) calculations performed by the U.S. Geological Survey (USGS) using the procedure described in the document entitled, "Determination of the Primary and Secondary Source-Water Protection Areas for Selected

Surface-Water Public-Supply Systems in South Carolina, 1999," USGS Water Resource Investigations Report 00-4097.

Since developing the source water protection plan, the Department's approach to protecting potable water intakes and controlling the risk (potential to affect) when developing NPDES permit limitations has evolved into a more conservative approach than that used only a few years ago. Initially these limits were based on the permit writers' best professional judgment and the Department's selection of an arbitrary value of 50 river miles upstream. Now the Department insists that to protect the drinking water intake the discharge cannot impact any part of the SWPA. The source water protection plan was developed to protect the drinking water source intake; however, the Department insists that the SWPA is what needs to be protected and has implemented a program with overly conservative assumptions irrespective of analytical data that may clearly demonstrate that there is no potential risk to downstream drinking water intakes.

R.61-68.G.10 states that "Freshwaters (FW) are freshwaters suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment in accordance with the requirements of the Department." SCMA believes that a permittee should be able to demonstrate, through the use of scientific methods (e.g. instream sampling and/or modeling) acceptable to the Department, that there is no reasonable potential for the water body to exceed the W/O criteria or MCLs at the intake. Historically the Department has afforded the regulated community only a rigid application of the SWPA. This includes NPDES discharges within or upstream of SWPA's.

Regarding potential impacts within SWPA's there is an additional section of R.61-68 that will require modification to achieve a resolution to these issues. Part C.10.a of R.61-68 leads to this level of protection as it states, with regards to mixing zones, that:

> "In order to protect human health, mixing zones are not allowed when: they would endanger public health and welfare, any portion of the mixing zone would be in a state-approved source water protection area, the mixing zone…"

The Department indicated that while the regulation was modified to include this requirement back in 2001, they have allowed mixing zones (i.e., dilution/dilution factors) within SWPA's when calculating NPDES permit limits. The elimination of mixing zones in SWPA's would mean the elimination of dilution in calculating permit limits and the use of 100% WET limits and chemical-specific limits based directly on the most restrictive water quality criteria. Simply put, existing NPDES dischargers' ability to comply with these requirements would essentially be impossible based on the required treatment costs. Since the intent of the source water protection program is to protect the potable water intakes, mixing zones should be allowed.

The Department has indicated that it will not allow modeling, instream sampling, or some other scientific proof that physical and biological instream processes reduce the concentrations to levels where there is no potential for the NPDES discharged parameters to impact water quality at downstream intakes. W/O and MCL's should not automatically be applied to discharges in SWPA's if the permittee proves by scientific means that there is no potential to affect water quality at a downstream drinking water intake(s).

The Department's extremely conservative permitting policy regarding Section E.14.c(5) requires the application of W/O and MCLs in NPDES permits regardless of the upstream distance/travel time. Based on this premise, the Department will always determine that there is a reasonable potential to affect a downstream potable water intake. In other words, an NPDES discharger in

the upstate could have the potential to impact a drinking water intake in the Lowcountry (assuming that was the nearest downstream potable water intake).

R.61-68 Requested Changes

There are only two sections of R.61-68 that pertain to the application of NPDES permit limitations within/upstream of a SWPA, and the recommended changes are shown using highlighted text for additional language and ~~strikeout text~~ for removed language. SCMA recommends that the Department adopt the language offered below when developing NPDES permit limitations.

Section C.10.a of the regulation should be modified as shown:

> In order to protect human health, mixing zones are not allowed when: they would endanger public health and welfare, ~~any portion of the mixing zone would be in a state-approved source water protection area,~~ the mixing zone would adversely affect shellfish harvesting, or the mixing zone would be for bacteria (e.g. fecal coliform).

Section E.14.c(5) of the regulation should be modified as shown:

> Except as provided herein, where application of MCLs or W/O numeric criteria using annual average flow for carcinogens, 7Q10 (or 30Q5 if provided by the applicant) for noncarcinogens, or comparable tidal condition as determined by the Department results in permit effluent limitations more stringent than limitations derived from other applicable human health (organism consumption only), aquatic life, or organoleptic numeric values; MCLs or W/O shall be used in establishing permit effluent limitations for human health protection. The permit limitations shall be derived using the instream flow rate at the potable water intake point and with the expectation that the permittee will meet MCLs or W/O criteria at the point of the potable water intake. The Department may, after Notice of Intent included in a notice of a proposed NPDES permit in accordance with Regulation 61-9.124.10, determine that drinking water MCLs or W/O shall not apply to discharges to those waterbodies where there is: no potential to affect an existing or proposed drinking water intake~~source and no state-approved source water protection area~~. For purposes of this section, a discharger's potential to affect a drinking water intake, or lack thereof, shall be determined using the source water protection boundary generated by the 24-hour time of travel distance from the intake for the fifty (50) percent exceedance flows (i.e., TOT50 location). If the discharge is outside this boundary, these MCL and W/O criteria do not apply. Additionally, if the discharge is inside this boundary, the discharger may demonstrate using actual instream measurements (using a state-approved sampling method, analytical method, and practical quantitation limit for each substance) or hydraulic/water quality modeling/calculations, for a single or multiple water quality criteria, that there is no potential to affect the drinking water intake and therefore that the criteria do not apply. For purposes of this section, a proposed drinking water intake~~source~~ is one for which a complete permit application, including plans and specifications for the intake, is on file with the Department at the time of consideration of an NPDES permit application for a discharge ~~that will affect or has the potential to affect the drinking water source~~.

Summary

Unnecessarily stringent NPDES permit discharge limits are the result of the Department's current application of its source water protection program to the NPDES permits of regulated entities.

Unnecessarily stringent limits are unwarranted if there is no demonstrated and significantly added level of protection of human health or the environment associated with these limits. NPDES permit limits that are overly protective of human health and the environment result in cost impacts to regulated entities that run into the millions of dollars in operational modification expenditures. This added cost is not justified nor is it sensible if there is no demonstrated increase in protection to human health or the environment associated with the Department's application of the source water protection policy. SCMA therefore presents these comments in order to initiate a discussion with the Department that will lead to modification of the Department's regulations to reflect our comments and recommended changes as stated in the paragraphs above.

**RESTRICTION OF INSTREAM DILUTION**

SC Regulation 61-9, *Water Pollution Control Permits*, contains a requirement that SCMA believes should be addressed through R.61-68 and the associated permitting procedures more clearly defined. Many rivers in South Carolina are listed as impaired water bodies for the consumption of fish tissue due to methylmercury, even though the instream mercury concentration is not higher than the most restrictive stream standard. Whether the impairment is due to mercury, iron, or another parameter, SCMA does not agree, as mentioned in permit rationales, that section 122.44(d)(1)(ii) of R.61-9 is applicable to restrict the use of dilution flow when evaluating the reasonable potential for the discharge to result in an exceedance of the stream standards. With regard to establishing limitations, standards, and other permit conditions, that part of R.61-9 states,

> (d) Water quality standards and State requirements: Any requirements in addition to or more stringent than promulgated effluent limitations guidelines or standards under sections 301, 304, 306, 307, and 318, and 405 of CWA necessary to:
>
> (1) Achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality.
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> (ii) When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and non-point sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.

Due to the cost associated with compliance with unnecessarily stringent NPDES permit limitations, SCMA recommends that Sections C.4.a(2) and C.4.b(2) be modified as shown to clarify that the application of dilution flow should only be restricted when required by an associated TMDL. Since the language in R.61-9 does not specifically restrict dilution flow when deriving water quality-based permit limitations, SCMA believes that no modification of that regulation is necessary.

4. Flow requirements, prohibitions, and exceptions.

    a. Aquatic life numeric criteria

(1) The applicable critical flow conditions for aquatic life criteria shall be defined as 7Q10 or tidal conditions as determined by the Department. The numeric criteria of this regulation are not applicable to waters of the State when the flow rate is less than 7Q10 except as prescribed below.

(2) Except for impaired water bodies addressed within TMDLs, t~~T~~he Department shall consider conditions that are comparable to or more stringent than 7Q10 where appropriate to protect classified and existing uses, such as below dams and in tidal situations. Only those situations where the use of 7Q10 flows are determined to be impracticable, inappropriate, or insufficiently protective of aquatic life uses shall be considered as a situation in which the Department may consider other flow conditions.

(3) The Department shall use the applicable critical flow conditions for the protection and maintenance of aquatic life for, but not limited to, the following: permit issuance, wasteload allocations, load allocations, and mixing zones.

b. Human health and organoleptic numeric criteria

(1) The applicable critical flow conditions for human health shall be defined as annual average flow for carcinogens, 7Q10 (or 30Q5 if provided by the applicant) for noncarcinogens, or tidal conditions as determined by the Department. The applicable critical flow conditions for organoleptic criteria shall be defined as annual average flow or tidal conditions as determined by the Department. The numeric criteria of this regulation are not applicable to waters of the State when the flow rate is less than the annual average flow for carcinogens or 7Q10 (or 30Q5 if provided by the applicant) for noncarcinogens, except as prescribed below.

(2) Except for impaired water bodies addressed within TMDLs, t~~T~~he Department shall consider conditions that are comparable to or more stringent than annual average flow, 7Q10, or 30Q5 (if provided by the applicant) where appropriate to protect the classified and existing uses, such as below dams and in tidal situations. Only those situations where the use of annual average flow, or 7Q10, or 30Q5 (if provided by the applicant) are determined to be impracticable, inappropriate, or insufficiently protective of human health uses shall be considered as a situation in which the Department may consider other flow conditions.

(3) The Department shall use the applicable critical flow conditions for human health and organoleptic effects for, but not limited to, the following: permit issuance, wasteload allocations, load allocations, and mixing zones.

Thank you for this opportunity to provide additional comments in this very important rule making process. If you have any questions, please feel free to call me at (803) 799-9695.

Sincerely,

Sara N. Hopper
Director of Government Relations